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BACKWARD DISLOCATION  
OF  
THE FINGERS  
UPON  
THE METACARPUS.

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## BACKWARD DISLOCATION

OF THE

## FINGERS UPON THE METACARPUS.<sup>1</sup>

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UNTIL the patient whose case is recorded below (Case 1) presented himself for treatment, and I learned from experience the difficulty occasionally found in the reduction of dorsal dislocations of the proximal phalanges of the fingers, my attention had not been specially drawn to the subject. Dislocation of the fingers is so frequently dismissed in the text-books with a few lines (excepting that of the thumb, which is usually discussed at length) expressive of the ease with which they can be reduced, without a word of warning as to the difficulties met with at times, that there is a general impression in the profession that nothing is easier than to reduce such dislocations. That this is occasionally an erroneous one the notes of such cases which it was my duty to treat when resident assistant surgeon at St. Thomas's Hospital will show.

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<sup>1</sup> For permission to publish these cases I am indebted to Mr. Croft and Mr. Mackellar.

CASE I.—On Sunday, Oct. 3rd, 1886, the house surgeon asked me to see a boy who had applied in the casualty department for a dislocated finger, which neither he nor the dresser could reduce. The patient, J. H——, aged ten, said that he had been playing “leapfrog” a short time before, and whilst jumping over one boy’s back placed his hands too far forwards, and, missing the back altogether, fell on his hands on the pavement. On examination, the right forefinger was found displaced upwards, backwards, and inwards on the metacarpal bone, the signs of dislocation being well marked. All attempts to reduce it by the house surgeon and myself, with and without the assistance of special apparatus, failed; so chloroform was given, but several attempts at reduction by manipulation were unsuccessful. A tenotome was introduced on the back of the hand above the base of the phalanx to the outer side of the extensor tendon, and the fibrous and tendinous structures to the outer side of the joint divided from within outwards. The dislocation was reduced after flexion, circumduction, and strong adduction, the phalanx returning to its position with an audible click. A pad of collodion on wool was applied to the puncture, and the hand bandaged to an anterior splint. No complication arose, and a fortnight afterwards the boy had perfect movement of the joint and no loss of power. This case presented many unusual features, and, as a result of it, I was led to inquire more fully into the literature on the subject. In my search I was fortunate in meeting with a paper<sup>2</sup> by Dr. Otis of Boston, U.S.A., from which I received assistance. He had unexpectedly met with difficulty and failure in attempted reduction of dislocations of the index

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<sup>2</sup> Boston Medical and Surgical Journal, Sept. 1886, p. 203.

finger in two instances, and was led to inquire into the subject. The result, with some references, was given in the reprint to which attention was directed in the *Lancet*.<sup>3</sup> The general conclusions to which he came receive additional confirmation from the success attending the treatment of the following cases, and from the more recent writings on the subject, to which I propose to refer later.

It was not long before another, but more serious case, was brought to me by Mr. R. Andrews. As this was one which had been done some considerable time, and would eventually require more serious measures to effect reduction, he was admitted under the care of Mr. Mackellar, who kindly gave me permission to treat him.

CASE 2.—J. II—, aged eight, was admitted on Oct. 20th, 1886, having been unable to flex the left forefinger since a fall on the hand, when the fingers were outstretched, between seven and eight weeks before admission. Since the accident several unsuccessful attempts had been made to reduce the displacement. On the afternoon of admission, chloroform was administered and an attempt made to reduce the dislocation, but without success. An attempt was then made to reduce it after subcutaneous section of the glenoid and internal lateral ligaments; this was also unsuccessful. A lateral incision was then made along the outer side of the joint, and another shorter one at right angles to it, and the interior of the joint exposed. Considerable changes had taken place in the joint, the head of the metacarpal presenting, instead of the usual shining cartilaginous appearance, a dull fibrous, roughened

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<sup>3</sup> Vol. II, 1886, p. 1190.

surface. This could hardly be separated, and was probably a displaced adherent glenoid ligament. With some trouble and the use of the point of the scalpel this was separated to an extent permitting the replacement of the phalanx. The wound was closed with silk sutures, and a small piece of silk introduced for drainage. The joint was opened under the spray, and iodoform and iodoform wool used for the dressing. A splint was applied. The wound was dressed next day, and again on the 23rd, when it was almost healed. He left on the 24th, with a splint still applied. In less than a week the finger was moved under chloroform and could be fully flexed. This was repeated easily in a few days, but the parents did not like the passive movement, as the child made an outcry, and elected to have nothing further done; they were satisfied with the improved appearance of the hand. From the ease with which we could move this joint when the patient was last under chloroform, there seemed little doubt that he would regain much use of it.

CASE 3.—A satisfactory result was more easily obtained in the case of a strong, healthy stonemason, who applied at the hospital on April 26th, 1887, suffering from injury to the left hand. This had been caused by the fall of a heavy stone from a crane on the back of the hand. On examination it was found that there was dorsal displacement of the left little finger, the metacarpal bone being very prominent in the palm of the hand. Both the dresser and the house surgeon had made ineffectual attempts to reduce the displacement by traction and flexion. The finger returned at once to its position after the phalanx had been fully extended, carried backwards, pressed against the metacarpal bone, and then firmly flexed, without anæsthetic. The



pain, which was considerable before reduction, disappeared at once.

CASE 4.—The result in this case was equally good. On Aug. 4th, 1887, a girl aged thirteen applied in the casualty department with a swollen hand. On the previous day she had been struck on the back of the hand with a broom-handle. The dorsum of the right hand was much swollen, red, very painful, and tender. Posteriorly the second metacarpo-phalangeal joint was much obscured by the swelling; in the palm the prominent head of the metacarpal bone could be easily felt. This was reduced in my presence by Mr. Staveley, the house surgeon, after full dorsal flexion, pressure of the phalanx on the metacarpal bone, and palmar flexion, reduction being effected, to the delight of the patient, with an audible snap. The hand was placed on a front splint, and lead lotion applied. In a short time the swelling disappeared, and the finger became quite as useful as before the injury was received.

I have considered it worth while to publish Cases 5 and 6, which were dislocations of the thumb, as they illustrate important points in these dislocations not only as regards treatment.

CASE 5.—*Dislocation of the thumb backwards; subcutaneous division of the short flexor; reduction.* (From notes by Mr. H. Hudson, dresser.)—C. H——, aged twelve, a paper-boy, came to the casualty department on Wednesday, Sept. 15th, 1886, stating that he had fallen down upon his hands and had hurt one of his thumbs, it being straight out at the time. The proximal phalanx was dislocated backwards so as to form an obtuse angle with the metacarpal bone. It could be brought into position again without much difficulty, but immediately returned. The head of

the metacarpal bone could be seen and felt at the front of the joint. Reduction was attempted by manipulation and traction combined, without success, by those on duty. Ether was then given, and attempts were again unsuccessfully made, the American forceps being also employed. A tenotome was then inserted and the inner tendon of the flexor brevis pollicis divided, without success. It was only after division of the other head of the muscle also that the joint could be placed in position. Collodion was applied to the wound, and the thumb well bandaged into the palm; the forearm and hand placed on a splint. Four days later the wound had quite healed, and he had had very little pain. The splint was again applied after gentle movement of the joint. He was asked to come up again, but did not do so. One may, however, probably conclude that the result was satisfactory.

About nine months later a little girl was brought to the out-patient department and transferred to the care of Mr. Mackellar, who kindly allowed me to act for him. The case is as follows:—

CASE 6. *Dislocation of the right thumb at the metacarpo-phalangeal joint of five weeks' duration; tenotomy; passive movement; recovery.*—E. M. C——, a girl aged six, was brought to the hospital on June 13th, 1887. Her mother complained that the girl had received an injury to the thumb through falling on her hand five weeks previously, that the “doctors” said the child had put out her thumb, but they had been unable to reduce it. Examination revealed a typical displacement at the metacarpo-phalangeal joint, there being no swelling or tenderness to obscure the displaced ends. Reduction under chloroform was attempted by manipulation, but without success. A



tenotome was introduced to the outer side of the extensor tendon, and an attempt made to reduce the displacement after division of the outer head of the flexor brevis, and any portion of the glenoid ligament which might be lying on the dorsum of the metacarpal bone. Reduction was then effected by extension, rotation, and adduction. The wound, which was a mere prick, was closed with collodion, and the thumb flexed and bandaged into the palm. She was allowed to go home. The next day she was rather feverish, and had passed a somewhat restless night, complaining of pain in the thumb. She had also vomited; this was probably due to the anæsthetic. Two days later there was no tenderness, and she had slept well. Four days after the operation the bandage was readjusted. At the end of six days the thumb was gently flexed and extended. There was considerable tendency to ankylosis, and on the ninth, twelfth, seventeenth, and twenty-fourth days chloroform was given and the thumb vigorously moved; after each procedure there was some swelling, but no splint was applied, the mother using oil and rubbing and flexing the joint between her visits to the hospital. On the twenty-seventh and thirty-first days it was moved without chloroform, the movement being fair. A week after it was found to move easily under chloroform, and when the child was seen later she could herself flex and extend the joint. There was no tendency to lateral displacement.

As I have already mentioned, much attention has been given in the past to dislocations of the first phalanx of the thumb on account of the difficulty so frequently met with in the reduction of the backward dislocation of that bone, the reasons for which vary according to different authors. I do not, however,

propose to enter fully into a consideration of these, the arguments for and against them being many and the literature on the subject voluminous.<sup>3</sup> As they have received so much consideration at the hands of surgeons, it may be as well to briefly enumerate them in order to see if there are any likely to cause a similar difficulty in the case of the other metacarpophalangeal joints. In England the action of the two heads of the flexor brevis pollicis in their altered relationship to the head of the metacarpal bone, which they embrace as a button-hole the button, has received and still receives the commonest acceptance as the cause for difficulty in reduction, the bone being said to tear its way through the fibrous tissue uniting the two heads of the muscle and remain fixed in its new position.<sup>4</sup> Other causes may be constriction of the neck of the bone between the lateral ligaments of the joint<sup>5</sup> (the writer in Heath's Dictionary says they are nearly always ruptured). Folding in of the anterior ligament of the joint and the interposition of a sesamoid bone has also been suggested,<sup>6</sup> and this view has numerous supporters.<sup>7</sup>

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<sup>3</sup> See also Kelley, Dublin Journal of Med. Science, May, 1883.

<sup>4</sup> The more probable explanation (Erichsen). Generally accepted (Heath's "Dictionary of Practical Surgery," vol. i., p. 674). Confirmed by observations of Vidal, Malgaigne, Ballinghall (Gant, "Science and Practice of Surgery"), and by Fabbri and Hamilton (Heath, op. cit.). The occasional failure of division of the short flexor (to ensure reduction), due to a difficulty in dividing all the opposing fibres (Holmes, "System of Surgery," vol. i., p. 988).

<sup>5</sup> Hey, Dupuytren, Erichsen, Gant. <sup>6</sup> See Erichsen, vol. i. p. 589.

<sup>7</sup> Paillonx, Deville, Wadsworth (Gant), Michel, Laurie, Roser, B. Anger (Heath), Hueter, Michel, Leva, Blechy, Farabeuf, Polaillon, Jalaguier, Keetley, Walsham, Bryant, and Druitt.

Farabeuf, in his paper on backward displacement of the thumb, says: "La phalange n'est rien; les os sesamoïdes sont tout." Sir Astley Cooper ascribed it to the contraction of the six muscles inserted into the phalanges of the thumb. The long flexor tendon was found causing the difficulty in reposition by Lisfranc, Esmarch, Deville, Wadsworth, and Bryant. Others may be mentioned: the cuneiform or clubbed head of the metacarpal bone;<sup>8</sup> the interposition of the sesamoid bones;<sup>9</sup> the constriction of the metacarpal bone by the boundaries of the button-hole slit;<sup>10</sup> and the difficulty of applying sufficient force to the thumb.<sup>11</sup> These numerous suggested conditions, to one or more of which the difficulty in reducing these dislocations has been ascribed, indicate the rare opportunities afforded for fully investigating cases, it being very unusual for a patient to die whilst suffering from this injury. They also express wide divergence of opinion as to the real obstacle or obstacles amongst those who have given to them serious attention. Those who have had opportunity of examining the exact pathology of the displacement after arthrotomy, in unreduced dislocations found in the post-mortem room, or in dislocations produced in the cadaver, lay great stress on the resistance of the anterior ligament to the reduction, and there is no doubt that in a large majority of instances this, with its contained sesamoid bones, is the offending structure. As long ago as 1837, Mr. J. Adair Laurie, writing on

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<sup>8</sup> Hey Syme. <sup>9</sup> Humphry <sup>10</sup> Waitz. <sup>11</sup> Liston.

the subject,<sup>12</sup> said that "the anterior ligament is completely torn from the metacarpal bone, and remains attached to the phalanx and sesamoid bones in such a manner that the torn ligament and sesamoid bones are carried backwards by the phalanx and placed between it and the metacarpal bone. This state of parts is aggravated and rendered permanent by the contraction of the muscles attached to the sesamoid bones and anterior ligament, which muscles, together with the tendon of the long flexor, &c. The result of this is that the opening in the ligament, by which the metacarpal bone escaped, is thrown backwards nearly half an inch, and the remains of that ligament and sesamoid bones form a partition between the displaced ends of the bones, which forms a mechanical obstacle to the reduction of the dislocation, in some instances, I fear, insurmountable; this I am satisfied is the true cause, &c." He did not, however, fully appreciate the *rôle* played by it. From a consideration of the evidence in favour of the interposition of this ligament, the glenoid, as forming the obstacle to reduction in cases of dislocation of the four inner metacarpophalangeal joints, one has come to regard it as the principal if not only cause of serious difficulty in reduction of the backward displacement. Little assistance is, however, derived from English works on surgery in elucidation of this question; few mention it, or even refer to the fact that dislocations of

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<sup>12</sup> London Medical Gazette, vol. i., p. 95.

these joints are ever otherwise than easily reduced.<sup>13</sup> We have to turn to American and continental writers for information, and here it is usually found in special articles, such as that by Otis,<sup>14</sup> already mentioned. In the standard works on surgery, Agnew "had seen instances where it had not been diagnosed"; Hamilton "had come across two dislocations of the index finger, and readily reduced them"; Gross, "reduction usually not difficult." Ashurst<sup>15</sup> does not refer particularly to the fingers. Investigations have been recorded on this subject by MM. Farabeuf,<sup>16</sup> Polaillon,<sup>17</sup> Jalaguier,<sup>18</sup> Schüller,<sup>19</sup> and others, of a valuable character, to which reference may well be made.

We may first consider the anatomical structure of the metacarpo-phalangeal joints, of which the accompanying drawing, Fig. 1, after Henle (for which I am indebted to Mr. E. Solly, of St. Thomas's Hospital), of a longitudinal section, gives a good idea. The various parts entering into its composition, are however, so well known that I will only refer to the glenoid or anterior ligament. My readers will see

<sup>13</sup> They are hardly mentioned by Erichsen or Gant. Hulke says (Holmes' System of Surgery, vol. i., p. 988): "The Nature of the injury is readily diagnosed and reduction effected." Bryant, Walsham, Boyd (Druitt's Surgery), and Keetley write in a similar manner, as does Holmes, who adds, however, that he found reduction impossible once.

<sup>14</sup> Boston Medical and Surgical Journal, p. 203.

<sup>15</sup> International Encyclopædia of Surgery, vol. iii., p. 681.

<sup>16</sup> Archives Générales de Médecine, 1876.

<sup>17</sup> Dictionnaire Encyclopédique des Sciences Médicales, article Doigt

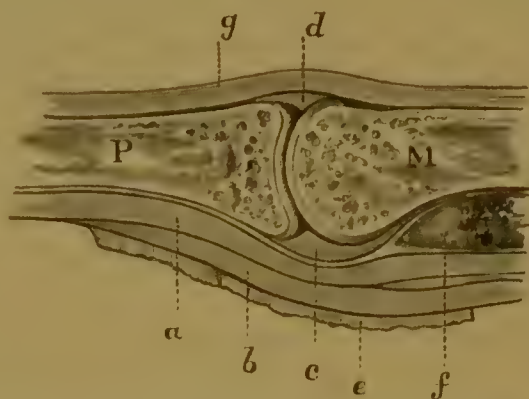
<sup>18</sup> Archives Générales de Médecine, 1886.

<sup>19</sup> Chirurgische Anatomie, part i., 1885.



the difference in size between the articulating surfaces, the relationship of the glenoid ligament to the head of the metacarpal bone, and the relations of the long tendons to the joint. The following is the description of this ligament in "Quain's Anatomy."

FIG. 1.



Section through metacarpo-phalangeal joint (after Henle).  
 M, Head of metacarpal bone. P, Base of first phalanx.  
 a, Tendon of flexor prof. digitorum. b, Tendon of flexor  
 sublimis digitorum. c, Glenoid ligament. d, Dorsal  
 ligament (absent, according to Gray). e, Vaginal liga-  
 ment. f, Interosseous ligament. g, Tendon of extensor  
 communis digitorum.

The anterior or palmar ligament, or rather fibrous plate, occupies the interval between the lateral ligaments on the palmar aspect of each joint; it is a thick and dense fibro-cartilaginous structure, which is firmly united to the phalanx, but loosely adherent to the metacarpal bone.<sup>20</sup> It is continuous at each side with the lateral ligaments, so that the three form an undivided structure, which covers the joint

<sup>20</sup> Only united to the neck of the metacarpal bone by the loose cul-de-sac of the synovial membrane (Jalaguier).



except on the dorsal aspect. Its palmar surface is grooved for the flexor tendon, whose sheath is connected to it at each side. The other surface looking to the interior of the joint is lined by the synovial membrane, and supports the head of the metacarpal bone.<sup>21</sup> In the joints of the thumb<sup>22</sup> there are two sesamoid bones, one situated on each side, which are connected with its ligaments. It will be noted in this description, which agrees with that of other anatomists, that the ligament<sup>23</sup> is very dense, strengthened in the middle line by the flexor tendon, united firmly to the lateral ligaments at each side, but much less strongly attached to the metacarpal bone than to its phalanx. In other words, the weakest point is the attachment to the metacarpal bone, and it is here that the ligament gives when dislocation occurs in consequence of sudden violent hyper-extension of the joint, the displaced phalanx carrying the ligament with it over the head of the metacarpal bone. This has been proved by experiments on the dead subject.<sup>24</sup> M. Farabeuf, in a hundred experiments on the metacarpo-phalangeal joint of the thumb, found that the phalangeal insertion was not once ruptured. Dr. Otis, in his experiments, found that it always gave at the metacarpal attach-

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<sup>21</sup> In the middle and ring fingers it is strengthened by the transverse ligaments.

<sup>22</sup> And usually one in the index and little fingers; to the radial side in the index and ulnar side in the little finger.

<sup>23</sup> Glenoid of Cruveilhier.

<sup>24</sup> Schaller: "The palmar capsule regularly ruptures at its metacarpal insertion."

ments in the case of the fingers ; in the thumb this varied somewhat, a difference being caused by the sesamoid bones. The observations which I have been able to make confirm this. At the same time it has been found that the lateral ligaments give to an extent which varies from complete rupture to the yielding of some of the anterior fibres, so it is probable that the part which they play, if any, is a very subordinate one. Farabeuf divided these backward dislocations into three varieties, in each of which the glenoid ligament follows the phalanx as if it were part of it : 1. Simple incomplete dislocation, the phalanx not having completely left the head of the metacarpal. 2. Simple complete, in which the phalanx has become displaced on the dorsum of the metacarpal bone, and rests with its anterior edge on the neck of the metacarpal. 3. Complex, in which the phalanx occupies a similar position, but the glenoid ligament with its sesamoid has become turned,<sup>25</sup> and is interposed between the two bones, rendering the dislocation irreducible. Fig. 2 illustrates this ; a state of the parts similar to that described by Laurie. This third variety nearly always results from ill-judged and violent attempts to reduce the simple complete form which always precedes it.

M. Jalaguier<sup>26</sup> was called upon to treat a complex dislocation of the index finger. He could not reduce

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<sup>25</sup> "The phalanx draws it up, the short flexor keeps it in position."  
—Farabeuf.

<sup>26</sup> Archives Générales de Médecine, 1886.

it by manipulation, so, guided by the experiments of Farabeuf on the thumb, made similar experiments a number of times on the index finger, and came to the conclusion that the glenoid ligament was the retaining structure. He then, after proving the possibility of dividing this successfully by a subcutaneous operation on the dead subject, performed a similar operation for his patient with success. It was seen by me in Case 2, and others have also seen it.<sup>27</sup> Mr. Symonds opened the joint in two cases,

FIG. 2.



Diagram to illustrate position of the glenoid ligament. Antero-posterior section. M Metacarpal bone. P, Phalanx. c, Glenoid ligament displaced and turned. d, Ruptured dorsal ligament, occasionally present.

and found a ligamentous structure covering (and in one case concealing) the head of the metacarpal bone; after division of this, he readily effected reduction. Mr. Croft has found a similar band present in a case of his own; Mr. Davies-Colley also.<sup>28</sup> Many have not recognised its importance.

<sup>27</sup> Clinical Society's Transactions, vol. xxi, p. 166.

<sup>28</sup> See also Ballingall, Edinburgh Medical Journal, 1815.

The diagnosis of these dislocations is usually easy; if careful examination be made and the hands compared, there ought to be no mistake, the deformity, shortening, and loss of function being so marked in most cases. Agnew states that he has seen instances where this dislocation had not been diagnosed. It is true that the injury which causes the displacement may be followed by considerable swelling before the patient applies for treatment, especially when it is applied directly to the part; this, however, is usually on the dorsum of the hand, obscuring the backward projection of the phalanx; the head of the metacarpal bone can be felt projecting boldly in the palm, and there is shortening. Perhaps I may be excused if I mention here two conditions which have presented themselves for diagnosis resembling forward dislocation at the metacarpo-phalangeal joints, which I have recently seen. These were union of the epiphysis of the second metacarpal in its new position after displacement towards the palm, and union after fracture of the first phalanges of the fourth and fifth fingers at an oblique angle. The fracture was caused by a sharp weight falling across the hand immediately below the articular surface of the phalanges, and the usefulness of the hand was impaired. The phalanges were strongly flexed at their articular extremities, whilst the fingers were in extension, so that the flexor tendons could not draw them into the palm.

Assuming that the anterior ligament with its sesamoid bone forms the impediment to reduction,

what methods are likely to lead to a satisfactory replacement of the bones? Manipulation can be employed with the best results if the pathology of the dislocation be borne in mind. This must be employed in a certain definite manner, as it is in dislocations of the larger and more important joints, where it has superseded the cumbrous and dangerous pulleys. Simple violent extension has been employed with disastrous results, and jerky irregular movements are liable to produce the worst or complex form, where the displacement is at first of the simple variety. The surgeon should in the first instance endeavour to reduce the dislocation by gentle but firm manipulation, without the administration of an anæsthetic, and that in the manner known as the dorsi-flexion method.<sup>29</sup> An account of this is given as follows: "I tilt the displaced phalanx up until it stands upon its articular end, place both forefingers so as to hold it in that position, and at the same time press against the distal extremity of the metacarpal bone. Under firm pressure, with the thumbs against the base of the dislocated phalanx, I slide it into place, which can generally be accomplished with ease."<sup>30</sup> In complex cases it is advisable to carry the base of the phalanx backwards along the dorsal surface of the metacarpal bone, with traction on the digit, in order to try to get the ligament and its sesamoid

<sup>29</sup> Recommended by Crosby of Hanover, N.H., 1826; employed by Roger, Sir Charles Bell, and Gerdy. Osler did flexion after extension successfully (THE LANCET, 1873).

<sup>30</sup> Report of Standing Committee on Surgery, Transactions of American Medical Association, vol. iii., 1855.



bone more fully in front of the anterior margin of the articular surface of the phalanx before flexion. Should this method fail, which it rarely does, consent to operation may be obtained, and the manipulation repeated under chloroform, when, if it again fails, recourse can be had to operative measures without unnecessary delay. Various mechanical means have been recommended to enable the surgeon to apply greater power to the displaced member, but I would advise that faith be placed more in skilled manipulation than in mere strength. Amongst these contrivances are the American forceps, Levis's apparatus, the Indian puzzle, and the clove hitch, applied over a layer of moistened washleather. Mr. Holmes recommends that the surgeon should wait and apply cold to the joint for a time, but I am convinced that in the thumb as in the finger the best method of procedure now will be to endeavour to divide the anterior ligament as it lies on the head of the metacarpal. In both thumb and finger reduction has been effected after division of the lateral structures, which keep the bones in apposition,<sup>31</sup> but probably this has acted in many instances by freeing the anterior ligament from its side attachments, and so rendering the opening through which the head has passed larger. The impression given me by the manner in which the phalanx returned to its position in Case 1, is that this is the explanation of

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<sup>31</sup> Ranke (Berliner klinische Wochenschrift, 1877, p. 524) opened a thumb and also a finger from the palmar aspect, and in both found the glenoid ligament separating the bones.



the success of the operation done for that patient. In order to divide the glenoid ligament, say, in the case of a dislocation of the index finger, it is best to take a strong sharp tenotome with a small blade, and make the puncture from the dorsum and to the outer side of the extensor tendon. Enter the point of the tenotome about a quarter of an inch behind the articular surface of the phalau, the bones being in the same axis; pass it onwards to the head of the metacarpal, and withdraw, pressing it firmly against the bone, for the ligament is dense. This section should be made along the centre of the ligament, to avoid the sesamoid bone. Mr. Hulke, in his article on Dislocation in "Holmes' System," to which I have already referred, says he has found in the dead subject that a division of the fascia which connects together the sesamoid bones, by allowing the tendons to separate from each other quite up to their insertion, naturally facilitates reduction, without resorting to section of the muscle itself. He had not tried it in the living. Should this method fail in aiding reduction, the surgeon had better proceed to open the joint with antiseptic precautions, as was done in Case 2, for a good movable joint may be obtained if the dislocation is of recent origin, and care be taken with the after-treatment to prevent ankylosis. When failure to reduce the dislocation has possibly been met with, or in old dislocations not deemed advisable, the question of excision of the head of the metacarpal bone must be considered, and there is no doubt that this is indicated sometimes, especially in the case of ankylosis of the

thumb, where a movable joint is so important. I have seen more than one instance of useful thumb with unreduced dislocation.

Similar methods of procedure should be tried in the dislocation of the thumb on failure of manipulation (practically the method recommended by Farabeuf and Jalaguier). But the surgeon, remembering the flexor brevis muscle and the greater mobility of the first metacarpal bone, will do well to follow the method of Fabbri,<sup>32</sup> and flex the metacarpal towards the centre of the hand to relax that muscle, and also the ligament. The tendency of the day is to divide the tendon or tendons of the flexor brevis either by subcutaneous section or by Humphry's method (incision of the joint sufficiently large to admit a small blunt hook, with which I should endeavour to pull forward the sesamoid bones).<sup>33</sup> Batchelder<sup>34</sup> said: "Methods failed unless the lateral ligaments were divided by the method suggested by Sir Charles Bell."<sup>35</sup> These sections in all probability divided the free margin of the glenoid ligament (thus freeing the head) and the flexor brevis pollicis tendon, the good result being wrongfully ascribed to the division of the lateral ligaments, which are so frequently already torn. In all cases after reduction early resort should be had to passive movement of the joint.

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<sup>32</sup> *Memoire dell Acad. della Scienze dell Instituto di Bologna*. Referred to by Holmes, who gives illustrations from him.

<sup>33</sup> Humphry on the Skeleton, p. 435.

<sup>34</sup> *New York Journal of Medicine*, 1856, p. 339.

<sup>35</sup> He refers to a similar method of reduction by Doe, 1853 (*American Quarterly Journal of Medicine*). This method appears to have been used by Syme, Lizars, Reinhardt, Gibson, and Parker.

In compound dislocations of these joints the metacarpal bone has been forced through a wound in the palm, and the question of removing this projecting head of bone presents itself to the surgeon. With our present efficient antiseptics, however, an attempt should usually be made to save the joint, as a most successful result may sometimes be obtained. An unusual complication, reported by Mr. Symonds to the Clinical Society, was a fracture of the metacarpal bones, a spicule being found detached in each of his cases; this did not in any way interfere with a good result. Occasionally some difficulty is experienced in reducing dislocations of the other phalanges; in all probability this is due to the displaced anterior ligament of these joints. I recently saw Mr. Willett of St. Bartholomew's reduce such a dislocation under ether after the failure of attempts made by others some days before the patient, a young man, presented himself at the hospital.

To recapitulate the methods of treatment recommended, these are in the order in which they should be tried: 1. Manipulation by the "dorsi-flexion" method, without violence, and without (or on failure with) anæsthetic. 2. Subcutaneous section of the glenoid ligament from the back of the joint. 3. In the case of the thumb, subcutaneous division of one or both heads of the flexor brevis muscle. 4. Incision into joint under antiseptic precautions, with replacement of ligament or the long flexor tendon. 5. Excision of the head of the metacarpal bone after severe compound fracture or ankylosis of joint (especially of the thumb).

